

**USDA COMMODITY REQUIREMENTS**

**CSM1  
CORN SOY MILK  
FOR USE IN EXPORT PROGRAMS**

Effective Date: 10/04/05

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**Part 1 COMMODITY SPECIFICATIONS**

**Section 1.1 CORN SOY MILK REQUIREMENTS**

A. Quality of Corn Soy Milk

- (1) Corn shall be sampled and tested for the Cry9C protein pursuant to Food and Drug Administration (FDA) guidelines, and such test results shall be negative.
- (2) Corn shall be tested for aflatoxin in accordance with procedures approved by Federal Grain Inspection Service (FGIS). If the aflatoxin test proves positive, a quantitative test shall be performed. If the result of the quantitative test exceeds 20 p.p.b., the corn shall not be used in the production of the commodity.
- (3) The product shall be essentially free from foreign material and shall have a good characteristic taste and odor, free from rancid, bitter, musty, sour, and other undesirable or foreign tastes and odors. It shall be identical to or lighter in yellow color than the Munsell Color Standard #13649, and that which is darker in color shall be rejected. Color plate #13649 may be purchased from: Macbeth Division of Kollmogran Corporation, Little Britain Road, Drawer 950, Newburgh, New York 12550.
- (4) The product shall be of small particle size suitable for use as a dietary supplement for infants and children for serving as porridge, gruel, or an extender to other foods and shall meet the following requirements:

**Corn Soy Milk**

Item	Requirements <sup>1 2</sup>	
	Minimum	Maximum
Moisture	---	9.5%
Protein (Nx6.25)	19.0%	---
Fat	6.0%	---
Crude Fiber	---	2.0%
Material that will pass through a U.S. Standard No. 6 Woven-Wire-Cloth Sieve	99.0%	---
Material that will pass through a U.S. Standard No. 30 Woven-Wire-Cloth Sieve	---	92.0%
Material that will pass through a U.S. Standard No. 60 Woven-Wire-Cloth Sieve	---	60.0%
Consistency (Bostwick Value) uncooked	---	20.0 cm
Consistency (Bostwick Value) cooked, 12.25% gruel	10.0 cm	22.0 cm

<sup>1</sup> Unless otherwise specified analyses are expressed on a moisture-free basis.

<sup>2</sup> For method of analyses see Section 1.1.B.

Total Bacteria count per gram	---	50,000
Dispersibility shall be essentially free from lumping or balling when mixed with water.		
Salmonella, E. Coli, and Coagulase Positive Staphylococci shall be negative.		

B. Methods of Analyses

(1) Consistency (Bostwick value) for uncooked product for corn soy milk.

a. Apparatus

- (i) 1 250 ml. Pyrex beaker
- (ii) 1 wooden-handled spatula with 3-inch stainless steel blade
- (iii) 1 consistometer, Cenco-Bostwick Central Scientific Stock No. 24925

b. Method

Place 100 ml. water at 25° C in the 250 ml. glass beaker. Gradually add 45.0 grams of corn-soy blend being tested while stirring vigorously with the spatula. Then stir gently for 3 minutes using the spatula to smooth out any lumps that may form. Allow the slurry to stand an additional 2 minutes to complete hydration. Then stir gently for about 15 seconds with the spatula. Pour into the reservoir of the Bostwick consistometer until it is filled higher than its top level. Strike off the excess with a straight edge. Allow the slurry to rest for 30 seconds. Trip the release lever of the consistometer and read the Bostwick value after exactly 1 minute.

(2) Consistency (Bostwick value) for cooked product 12.25 percent gruel for corn-soy-milk.

a. Apparatus

- (i) 1 400 ml. Pyrex beaker
- (ii) 1 stainless steel kitchen fork
- (iii) 1 30° C water bath
- (iv) 1 consistometer, Cenco-Bostwick, Central Scientific Stock No. 24925

b. Method

Place 175 grams of boiling water in the 400 ml. beaker, cover with watch glass, and bring to boiling on an electrically heated hot plate with surface temperature 600° - 650° F. Gradually add 23.5 grams of the commodity to be tested, while stirring vigorously with the fork. Bring to boiling and boil for 2 minutes while stirring vigorously with fork. Remove from the hot plate and stir 1/2-minute.

Place the cooked slurry in the 30° C water bath and hold there for 10 minutes. Place on the scale and add water lost by evaporation so that total slurry weight is now 200 grams. Stir

25 times with the fork. Place cooked slurry in the 30° C water bath and hold there for 1 hour. Remove from the bath and pour into the reservoir of the Bostwick consistometer until it is filled higher than its top level. Strike off the excess with a straight edge. Allow the cooked slurry to rest for 30 seconds. Trip the release lever of the consistometer and read the Bostwick value after exactly 1 minute.

(3) Consistency for ingredient specification cornmeal, processed (gelatinized).

a. Apparatus

- (i) 1 800 ml. Pyrex beaker
- (ii) 1 wooden-handled spatula with a 5 inch stainless steel blade
- (iii) 1 cylindrical open-bottom container, i.e., a 3 inch long section of seamless steel tubing 3.0 inch o.d. and 2.87 inch i.d.
- (iv) 1 glass plate 10 by 10 inches
- (v) 1 paper measuring scale, 10 by 10 inches containing a drawn 3-inch diameter center circle and concentric circles drawn of increasing diameter every one inch. Space between circles is divided to indicate each 1/4 inch diameter.

b. Method

Place 400 ml. of water at 25° C in an 800 ml. beaker. Gradually add 125 g. of the gelatinized (processed) cornmeal while stirring vigorously with a wooden-handled spatula with a 5 inch stainless steel blade. Then stir<sup>3</sup> gently for 3 minutes using a spatula to smooth any lumps that may form. Allow the slurry to stand an additional 2 minutes for hydration. Then stir gently for about 10 seconds with the spatula. Place a glass plate over a paper measuring scale and center the cylindrical container over the scale. Transfer the slurry to the retaining cup which is resting in the vertical position on the flat glass plate. Transfer the slurry until the cup is filled higher than its top level. Strike off the excess with a straight edge. Allow the slurry to rest for 30 seconds. Then remove the cup from the glass plate with a vertical pull, avoiding lateral motion. Allow the cup to drain onto the patty for 10 seconds. After waiting 1 minute for the size of the patty to reach equilibrium, read its diameter to the nearest 1/8 inch, as shown on the scaled sheet of paper underneath the glass.

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<sup>3</sup> Mixing may be done using a Hobart Model N-50, slow speed; or equipment giving equivalent results.

D. Proportions

The ingredients of the product shall be in the following proportions:

<b>Ingredients</b>	<b>Pounds per 2,000-lb. Batch</b>
Cornmeal, processed gelatinized <sup>4</sup>	1,178
Soy flour, defatted (toasted) <sup>5</sup>	350
Nonfat dry milk, spray process	300
Minerals	60
Vitamin Premix	2
Soybean oil, refined, deodorized, stabilized <sup>6</sup>	110

E. Ingredient Specifications

(1) Cornmeal, Processed (Gelatinized)

a. Material and Processing

The cornmeal processed (gelatinized) shall be prepared from shelled yellow corn that has been dehulled and degermed. The corn used shall be clean, sound, and essentially free from other grains, weed seeds, and other foreign material. It shall be free of rancid, bitter, musty, sour, and other undesirable or foreign tastes and odors. The processed cornmeal shall be produced from yellow corn, as defined in the "Official United States Standards for Grain," (<http://151.121.3.117/reference-library/standards/standards.htm>), in effect at the time the applicable solicitation for offers is issued, using the conventional corn dry-milling process.

The cornmeal shall be processed by adding moisture and partially cooking in continuous cookers or on heated flaking rolls, drying and cutting, or by any other process that yields a product meeting the requirements for the finished processed cornmeal, and for the corn-soy blend product. A corn germ fraction may be added for fat enrichment prior to cooking.

b. Analysis

The cornmeal, processed (gelatinized) shall conform with the

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<sup>4</sup> A corn germ fraction in amount not over 10 percent of the weight of the mixed product may be added to the cornmeal before processing and the amount of added oil contained therein omitted from the soy oil added to the soy flour fraction or to the final mix, provided the blend contains a minimum of 17.5 percent of fat-free soy flour. The weight of processed cornmeal plus soy oil specified shall include the weight of any corn germ fraction added thereto.

<sup>5</sup> The stabilized oil may be added to this soy flour fraction or full-fat soy flour may be used in place of all or part of the defatted soy flour plus soy oil, as specified, provided the blend contains a minimum of 17.5 percent fat-free soy flour.

<sup>6</sup> The stabilized oil may be added to the mix in order to obtain the required minimum fat level of 6.0 percent in the blend.

Any combination of footnotes may be used to obtain desired results.

following detailed requirements:

**Cornmeal (gelatinized)**

Item	Requirements <sup>7</sup>	
	Min.	Max.
Moisture	----	11.0%
Ash <sup>8</sup>	----	1.25%
Material Through a U.S. Standard No. 6 Woven-Wire-Cloth Sieve	99.0%	----
Material Through a U.S. Standard No. 30 Woven-Wire-Cloth Sieve	----	85.0%
Material Through a U.S. Standard No. 60 Woven-Wire-Cloth Sieve	----	35.0%
Consistency (inches)	4.5	8.5
Total bacteria count, per gram	----	50,000

(2) Soy Flour, Defatted (Toasted)

c. Material and Processing

Soy flour, defatted (toasted) shall be the screened, finely-ground product obtained from selected soybeans by cleaning, cracking, dehulling, tempering, flaking, defatting with hexane, desolventizing, deodorizing, toasting (full cook with color change to light yellow or golden buff), and cooling.

d. Analysis

The soy flour, defatted (toasted) shall conform to the following detailed requirements:

**Soy Flour Defatted (Toasted)**

Item	Requirements <sup>9</sup>	
	Min.	Max.
Moisture	----	10.0%
Protein (Nx6.25) <sup>10</sup>	50.0%	----
Fat <sup>11</sup>	0.6%	----
Fiber	----	3.5%
Ash	----	6.5%
Material Through a U.S. Standard No. 100 Woven-Wire-Cloth Sieve	95.0%	----
Nitrogen Solubility, increase in pH	10.0	30.0

<sup>7</sup> For methods of analyses see Section 1.1.B.

<sup>8</sup> Moisture-free basis.

<sup>9</sup> For methods of analysis see Section 1.1.B.

<sup>10</sup> Moisture-free basis.

<sup>11</sup> See Section 1.1.D.

Urease activity, increase in pH	0.05	0.15
Total bacteria count, per gram	----	50,000
Color	Light yellow to golden buff	
Odor	Neutral to nutty	
Taste	Pleasant, neutral to slightly nutty	
Texture	A homogeneous flour	

(3) Soy Flour, Full Fat

e. Material and Processing

Soy flour, full fat shall be the screened, finely-ground product obtained from selected soybeans by cleaning, cracking, (optional) dehulling, tempering, cooking (full cook with color change to light yellow or golden buff), and cooling.

f. Analysis

The soy flour, full fat shall conform to the following detailed requirements:

**Soy Flour, Full Fat**

Item	Requirements <sup>12</sup>	
	Min.	Max.
Moisture	----	10.0%
Protein (Nx6.25) <sup>13</sup>	44.0%	
Fat <sup>1314</sup>	22.0%	----
Fiber	----	3.0%
Ash	----	6.0%
Material Through a U.S. Standard No. 100 Woven-Wire-Cloth Sieve	95.0%	----
Nitrogen Solubility Index	10.0	45.0
Urease activity, increase in pH	0.05	0.50
Total bacteria count, per gram	----	50,000
Color	Light yellow to golden buff	
Odor	Neutral to nutty	
Taste	Pleasant, neutral to slightly nutty	
Texture	A homogeneous flour	

(4) Soybean Oil

<sup>12</sup> For methods of analyses see Section 1.1.B.

<sup>13</sup> Moisture-free basis.

<sup>14</sup> See Section 1.1.D.

- g. Soy oil, refined, deodorized, and stabilized, shall contain 0.005 percent citric acid added on the cooling side of deodorization. The soy oil shall comply with the requirements of the latest revisions and amendments for Commercial Item Description A-A-20091D (May 7, 2002), <http://www.ams.usda.gov/fqa/aa20091d.htm>; type IV not winterized salad oil.<sup>15</sup>
- h. Before addition to the product, the oil may be stabilized by the addition of butylated hydroxy anisole and butylated hydroxy toluene, each at a level of 2.5 mg. per 100 grams of formulated product. **Caution:** Antioxidant may be added to either the soy oil or to the vitamin antioxidant premix, but it shall not be added to both.

(5) Nonfat Dry Milk

- a. Nonfat dry milk (spray process) is to be furnished by the Government or contractor (as specified in the solicitation) and shall be U.S. Standard Grade or better as defined in Section 58.2528 of U.S. Standard for grades of nonfat dry milk (spray process). Grading certificates shall be dated not more than 180 days prior to the date of manufacture of the corn-soy-milk.
- b. If the Government is supplying the milk, the Government shall deliver the nonfat dry milk (spray process) for its account, f.o.b. cars or trucks, at the option of the Government at the contractor's plant. If the contractor's plant is not served by a railroad and the Government does not choose to deliver the nonfat dry milk (spray process) f.o.b. trucks, then the Government shall make delivery f.o.b. cars at the railroad delivery point customarily used by the contractor. The cost of unloading the nonfat dry milk (spray process) and any transportation from unloading point to plant shall be at the expense of the contractor. It shall be the responsibility of the contractor to unload cars within the free time period allowed by the railroad. The nonfat dry milk (spray process) shall be delivered in sufficient time for the contractor to begin processing the finished product so as to meet the contract shipping schedule.
- c. Since the title to the nonfat dry milk (spray process) delivered by the Government is at all times vested in the Government while such commodity is in the custody of the contractor, the contractor shall not substitute any commodity owned by the Government.

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<sup>15</sup> Analytical Data for type IV Salad Oil in Commercial Item Description A-A-20091D as follows:

(i) Stability, active oxygen method (AOM), PV not greater than 100 meg/kg (hours) maximum: 15 hours

- d. The contractor shall be liable for loss, damage, destruction, or deterioration from any cause whatsoever of the nonfat dry milk (spray process) received from the Government until the finished product has been delivered to the Government in accordance with the provisions of the contract. Any quantity of the finished product which is ultimately rejected to the contractor, the nonfat dry milk (spray process) portion of the quantity shall be for the contractor's account and the Government shall deduct from any amount due the contractor or hold the contractor liable for an amount equal to the value of the nonfat dry milk (spray process) as determined by the Government.

**Nonfat Dry Milk**

Item	Requirements	
	Min.	Max.
Protein (Nx6.38)	29.0%	----
Moisture	----	4.0%
Fat	----	3.0%
Ash	----	12.0%
Standard Plate Count	----	50,000 gm
Coliform Count	----	10 gm
Scorched Particles	----	15 mg
pH (1:9 dilution at 20° C)	6.6	----

- e. The product shall be a free flowing powder, cream to light yellow in color and bland in flavor. Compliance of modified whey product with these specifications shall be evidenced by an inspection certificate issued by Dairy Division, Agricultural Marketing Service.

(6) Minerals

Formulation	Ingredients	Per 2,000 lbs. of Product
1A	2% Tri-Calcium Phosphate	40.0 lbs
or B	1.8% Calcium Carbonate +	36.0 lbs
	1.6% Monobasic Sodium Phosphate	32.0 lbs
or C	1.8% Calcium Carbonate +	36.0 lbs
	1.6% Monobasic Potassium Phosphate	32.0 lbs
or D	1.3% Tri-Calcium Phosphate +	26.0 lbs
	0.6% Dibasic Calcium Phosphate	12.0 lbs
or E	0.9% Tri-Calcium Phosphate +	18.0 lbs
	0.6% Calcium Carbonate +	12.0 lbs
	0.8% Monobasic Sodium Phosphate	16.0 lbs
or F	0.9% Tri-Calcium Phosphate +	18.0 lbs
	0.6% Calcium Carbonate +	12.0 lbs
	0.8% Monobasic Potassium Phosphate	16.0 lbs

or G	1.7% Di-Calcium Phosphate Anhydrous + 0.5% Calcium Carbonate	34.0 lbs 10.0 lbs
or H	2.2% Di-Calcium Phosphate + 0.5% Calcium Carbonate	44.0 lbs 10.0 lbs
2	Zinc Sulfate, Monohydrate (ZnSO <sub>4</sub> ≅ 7H <sub>2</sub> O) <sup>16</sup>	0.25 lbs (113.45 g)
3	Ferrous Fumarate, FCC grade, purified	0.92 lbs (418 g)
4	Magnesium Oxide (MgO)	2.75 lbs
5	Iodized Salt (0.007% I <sub>2</sub> ) <sup>17</sup>	16.25 lbs

(7) Vitamin Antioxidant Premix

<b>Ingredients</b>	<b>Per 2,000 lbs. of Product</b>
Thiamin monoitrate	2.5 grams
Riboflavin	3.5 grams
Pyridoxine hydrochloride	1.5 grams
Niacin	45.0 grams
Ca D-pantothenate	25.0 grams
Folic acid	1.8 grams
Vitamin B12 <sup>18</sup>	12.0 milligrams
Vitamin A Palmitate (stabilized) <sup>19</sup>	21.0 million IU
Vitamin D (stabilized)	1.8 million IU
Alpha tocopherol acetate	68,000 IU
Butylated hydroxy anisole <sup>20</sup>	20.0 grams
Butylated hydroxy toluene	20.0 grams
Ascorbic acid (stabilized), ethyl-cellulose (coated), Soy flour, defatted (toasted) or starch to reach total weight; (additional soy flour may be added as a carrier, if desired)	364.0 grams
<b>Total</b>	<b>2.0 lbs.</b>

<sup>16</sup> The amount of zinc sulfate monohydrate shown is equivalent to 0.4 pound zinc sulfate heptahydrate

<sup>17</sup> The increase in iodized salt content represents a 25 percent increase in iodine content from previous specifications as recommended.

<sup>18</sup> Represents a reduction of 67 percent from previous specifications.

<sup>19</sup> Vitamin A Palmitate (stabilized) shall be added in encapsulated form containing 250,000 IU Vitamin A Palmitate/g. Particle size shall comply with the requirement that at least 98 percent shall pass through a U.S. Standard No. 50 sieve, at least 90 percent through a U.S. Standard No. 60 sieve, and at least 45 percent through a U.S. Standard No. 100 sieve. The product shall be not less than 95 percent of the all-trans isomer as determined by the USP assay procedure. The Vitamin A Palmitate shall have storage stability such that not more than 20 percent of its original activity shall be lost when stored for 21 days at 45° C in a sealed container at a level of 10,000 to 12,000 IU per pound in cornmeal having a moisture content in the range of 13.5 to 14.5 percent.

<sup>20</sup> If antioxidant is added in soy oil, omit from this premix [See Section I.D (4)]

- (8) The minerals and vitamin premix shall not be combined and shall be added to the formulation separately.

**Section 1.2 QUALITY ASSURANCE**

- A. The contractor shall perform the product testing and quality analysis to ensure that the product meets the commodity specifications. The results shall be evidenced by a Certificate of Analysis (COA). Copies of the original COA must be submitted as part of the invoice package. The COA shall provide the results of all tests specified. If quality discounts are provided in the contract, and the product to be delivered by the contractor falls within the quality discount table, those factors shall be identified by an asterisk on the copies of the COA.
- B. Contractors shall notify the Government immediately of lots that fail to meet contract requirements.
- C. Unless otherwise specified, test methods for the finished product, and any ingredients therein, shall be those of the AOAC INTERNATIONAL, the American Association of Cereal Chemists (AACC), or the American Oil Chemists’ Society (AOCS), as applicable and in effect on the date of issuance of the solicitation, or in accordance with methods that give equivalent results.

**Section 1.3 SAMPLING AND TESTING PROTOCOL**

- A. As a minimum, suppliers shall use the following sampling procedures which are based on FGIS’ Processed Commodities Handbook, Chapter 2.
- B. Lot size quantity and sample rate shall be as follows:

LOT SIZE (IN POUNDS)	LOT SIZE (IN KILOGRAMS)	NUMBER OF BAGS SAMPLED PER LOT
45,000 OR LESS	20,250 OR LESS	12
45,001-180,000	20,251 - 81,000	20

The maximum lot size shall be 180,000 pounds or 81,000 Kg.

- C. Bags shall be selected for sampling using a random number generator or a random number table. Samples shall be drawn from the selected filled and unclosed bag utilizing a stainless steel single-tube open-ended trier. The trier shall be inserted at one corner of the open end of the filled bag and moved diagonally through the center to the opposite corner of the bottom of the bag.
- D. Samples drawn from each sampled bag shall be composited to represent the lot. The composite sample shall weigh approximately five pounds. This composite sample will be divided into two equal subsamples; one will be for analysis and the other retained as a reserve by the supplier.

- E. All sample analysis may be performed by the supplier’s own in-house laboratory. The analytical results of each sample may be reported on the Certificate of Analysis (COA), refer to Exhibit C. This form is available at <http://www.fsa.usda.gov/daco/export.htm#Forms>.
- F. The contractor is responsible for ensuring that the commodity is uniform and substantially conforms to the specifications on a bag by bag basis.
- G. In the event the Government exercises its right, pursuant to FAR clause 52.246.2, Inspection of Supplies—Fixed Price, to perform its own testing, the following testing methods shall apply and will govern determinations as to whether or not the product meets the required specifications.

<b>TESTING METHOD</b>	
PROTEIN	AOAC 992.23
MOISTURE	AOAC 925.10
FAT	AOAC 922.06
CRUDE FIBER	AOAC 962.09E
IRON	AOAC 999.11
VITAMIN A	AACC 86-06

Note: Any AOAC testing methods shall be as prescribed in the latest edition of the AOAC’s “Official Methods of Analysis” in effect at the time of testing.

**Section 1.4 QUALITY DISCOUNTS**

If the product to be delivered by the contractor does not meet the quality specification, but falls within the discounts listed, the product may be delivered to the Government, but the purchase price shall be reduced in accordance with the following schedules of discounts for each 100 pounds of commodity delivered:

<b>Corn Soy Milk</b>			
<b>Excess Moisture</b>		<b>Deficient Protein</b>	
9.6% or 9.7%	\$0.10	18.9% thru 18.6%	\$0.10
9.8% or 9.9%	\$0.20	18.5% thru 18.3%	\$0.20
10.0%	\$0.35	18.2% or 18.1%	\$0.35
<b>Deficient Fat</b>		<b>Excess Crude Fiber</b>	
5.9% or 5.8%	\$0.10	2.1% thru 2.2%	\$0.10
5.7% or 5.6%	\$0.20	2.3% thru 2.4%	\$0.20
5.5%	\$0.35	2.5%	\$0.35
<b>Deficient Granulation Through No. 6 Woven-Wire-Cloth Sieve</b>		<b>Excess Granulation Through No. 30 Woven-Wire-Cloth</b>	
98% or 97%	\$0.10	93% or 94%	\$0.10
96% or 95%	\$0.20	95% or 96%	\$0.20
<b>Excess Granulation Through No. 60 Woven-Wire-Cloth Sieve</b>		<b>Excess Consistency (Uncooked) Bostwick Units</b>	

61% or 62%	10 cents	20.5 cm or 21.0 cm	\$0.10
63% or 64%	20 cents	21.5 cm or 22.0 cm	\$0.20
		22.5 cm or 23.0 cm	\$0.35
<b>Deficient Consistency (Cooked) (12.25% Gruel)</b>		<b>Excess Consistency (Cooked) (12.25% Gruel)</b>	
<b>Bostwick Units</b>		<b>Bostwick Units</b>	
9.5 cm or 9.0 cm	\$0.10	22.5 cm or 23.0 cm	\$0.10
8.5 cm	\$0.20	23.5 cm	\$0.20
8.0 cm	\$0.35	24.0 cm	\$0.35

## **Part 2 CONTAINER AND PACKAGING REQUIREMENTS**

### **Section 2.1 GENERAL**

This part provides the container specifications and packaging materials requirements used under this contract.

### **Section 2.2 CONTAINERS AND MATERIALS**

- A. All containers and packaging materials shall be manufactured and assembled in the United States. The components that make up the fabricating materials of the containers and packaging materials shall be of U.S. origin to the extent that they are commercially available. Questions concerning the availability of a material should be directed to:

USDA/FSA/DACO  
Room 5755 – South Bldg, STOP 0551  
1400 Independence Avenue SW  
Washington, DC 20250-0551  
ATTN: Packaging

- B. Constructed to meet the requirements of the Food and Drug Administration (FDA) for safe contact with the packaged product.
- C. The contractor shall obtain and maintain documentation from the container or packaging material manufacturer to verify that the containers and packaging materials used in this contract were in compliance with the Government's requirements.

### **Section 2.3 25-KILOGRAM MULTIWALL PAPER BAGS**

- A. Twenty-five kilograms of product shall be packed in Pinch Bottom Open Mouth (PBOM) style multiwall paper bags. The use of recycled materials is not required if performance or food safety is jeopardized.
- B. The bag shall have two inner walls of 50-pound nominal basis weight natural kraft paper and an outer third wall of 60-pound nominal basis weight wet strength paper in accordance with Uniform Freight Classification, Rule 40, Section 10, Tables A and B, as amended.
- C. The bag shall have a inner plastic liner constructed of linear low density polyethylene (LLDPE) film. The film liner shall:

- (1) Be a minimum thickness of 2.5 mil. with a density of 0.914 to 0.929 g/cc and a minimum heat-seal coefficient of 0.60. The film shall have a minimum impact resistance of 265g when tested in accordance with ASTM D-1709 Method A, as amended, Falling Dart.
- (2) The film liner shall have 8 to 12 micro perforations in each gusset area to allow for the evacuation of air from the product after filling and sealing.
- (3) Have a sufficient amount of anti-block. It shall be free from any blocking at 50°C and not subject to reblock at 70°C.
- (4) The film liner shall be loose for the full length of the bag except around the bottom and top closure areas. At the top and bottom closure areas, the liner shall adhere to the inner-most paper ply (time lamination). The laminating adhesive shall be machine direction applied in narrow strips no longer than 4 inches from each end. The use of gravure lamination to bond the liner to the inner-most paper ply for the entire length of the bag is prohibited.
- (5) Be adhered to prevent product from getting between the inner film and the next outer paper ply.
- (6) Not exceed a maximum average water vapor permeability of 0.65 grams per 100 square inches in 24 hours at 90 percent relative humidity and a temperature of 100°F plus or minus 5 degrees.
- (7) Be manufactured to meet Food and Drug Administration requirements for food products (21 CFR 177.1520, as amended).
- (8) Be heat-sealed at the bottom by the bag manufacturer. The top of the liner shall be heat-sealed by the packer once the bag has been filled with product.

D. Longitudinal seams of the outer wall of the bag shall be glued so that there is no more than 3/16-inch of unglued edge on the outer surface of the bag. The adhesives used in the longitudinal seams and pasted end closures shall be water resistant. Water resistant adhesive of outer ply longitudinal seams or pasted end closures shall be tested for resistance to water in accordance with TAPPI T456 (Wet Tensile Test), except as follows:

Cut test specimens 1-inch wide so that the longitudinal seam or pasted end closure runs perpendicular to and is centered relative to the long dimension of the specimen. The test specimen shall encompass all adhesive bonded areas included in fabricating the seam or end closure. In the case of multi-ply end closures, clamp all plies in the jaws of the tester. Immerse the specimens in not less than 1-inch of the distilled water for 24 hours. Run a wet tensile test. A test specimen fails the test if failure occurs with the separation of the seam or closure and less than 25% of the separated adhesive area shows fiber tear. Failure of more than 10% of the specimens shall be reported as failure of the adhesive.

**Section 2.4 25-KILOGRAM HIGH PERFORMANCE PACKAGING CONSTRUCTIONS**

- A. Contractors shall utilize one of the following constructions when the solicitation requires the use of high performance packaging:
- (1) Multiwall paper bag constructed of: One (1) ply inner film liner guaranteed 2.5 mil. minimum thickness linear low density polyethylene, four (4) plies of 50-pound natural multiwall kraft (NMK) paper, and one (1) outer ply of 60-pound wet strength natural multiwall kraft (WSNMK) paper; or
  - (2) Multiwall paper bag constructed of: 3.1 mil. (70 grams per square meter) film consisting of two or more layers of co-extruded polyolefin film with alternating angles of orientation, laminated together and biaxially oriented, two (2) plies of 50-pound NMK paper, and one (1) outer ply of 60-pound WSNMK paper. The bag shall be heat-sealed at the bottom, by the bag manufacturer. The top of the liner shall be heat-sealed by the packer once the bag has been filled with products.
  - (3) Both bag constructions shall:
    - (a) be uniquely marked with a one (1) inch blue stripe located approximately three (3) inches above the letters "USA" and extending around the width of each bag;
    - (b) meet the specifications and testing requirements outlined in these commodity requirements.

**Section 2.5 OUTER CLOSURE AND SEALS**

- A. The bottom and top of the 25-kilogram bag shall be closed to provide a tight seal using hot-melt or thermoplastic adhesive applied in a single band along the top edge of the long side of the bag and extending downward at least 3/4 inches. The fold line on the manufacturer closure end shall be 1-3/4 inches plus or minus 1/4-inch. The fold line on the field closure end shall be 1-5/8 inches plus or minus 1/4-inch. Refer to section 3.1.L. for bag closure guide location bars.
- B. The outer wall of the bag shall be stepped at the bottom and top fold over flap, beyond all inner walls, in order to provide a positive seal over the ends of the inner walls so that there is no more than 3/16 inches unbonded edge beyond the adhesive line. The inner polyethylene film may be heat-sealed.

**Section 2.6 PERFORMANCE TEST PROCEDURES**

- A. All bags shall be capable of withstanding the following performance test for impact resistance:
- (1) Ten filled and sealed bags shall each survive a single drop test on the butt and side on a shock machine that produces for each test a velocity change of 195 inches per second using a shock duration of .002 seconds without loss of product.
  - (2) Testing shall be conducted under standard temperature (73.4°F plus or minus 1.8°F) and relative humidity (50% plus or minus 2%) conditions.

- (3) Filled bags shall be placed in the conditioned atmosphere for sufficient time before the tests are conducted for the bag materials to reach equilibrium.
- (4) Bags submitted under this performance specification shall conform to all other applicable material, construction, and performance specifications.

**B. Test Laboratories**

Independent or private laboratories known to be capable of conducting the shock machine test described above are as follows:

<p>Michigan State University          School of Packaging          East Lansing, MI 48824-1223          (517) 355-9580  <a href="http://packaging.msu.edu/">http://packaging.msu.edu/</a></p>	<p>Lansmont Corporation          1287 Reamwood          Sunnyvale, CA 94089          (408) 734-9724</p> <p>Lansmont Corporation          6539 Westland Way, Suite 24          Lansing, MI 48917          (888) 526-7666  <a href="http://www.lansmont.com">www.lansmont.com</a></p>
<p>Rutgers University          Packaging Science and          Engineering Dept.          P.O. Box 909          Piscataway, NJ 08854          (201) 932-3679</p>	<p>Ten-E Packaging Services, Inc.          1666 County Road 74          Newport, MN 55055          (651) 459-0671  <a href="http://www.ten-e.com">www.ten-e.com</a></p>

**Section 2.7 SEAL PEEL TEST**

- A. The contractor shall perform periodic seal peel tests on the filling end of multiwall paper bags to determine whether the paper plies are adequately adhered. The seal peel test shall be performed at every start up and a minimum of every hour during commodity packing operations. The seal peel test shall demonstrate tear of paper fiber (fiber tear) for all paper plies. The contractor shall maintain records of seal peel test results for review by the Government.
- B. The seal peel test shall be performed as follows:
  - (1) Run an empty bag through the sealing unit.
  - (2) Cut bag approximately 3 to 8 inches below the seal.
  - (3) Cut both gussets along the center crease to the top of the bag end.
  - (4) Spread bag to expose poly liner.
  - (5) Check inside plastic liner along the closure and gussets to determine that the liner is heat-sealed. Pinholes, no larger than 1/8 inch in diameter, are allowable in the closure.

- (6) Grip inside fold at center of the bag end.
  - (7) Pull apart sides of the bag end at the center, separating seals. (If the seal is good, fibers shall completely cover adhesive. If the seal is poor, glossy adhesive will show).
- C. The contractor's seal peel test records shall include the following information for each test: date, time, employee's name, product, contract number, railcar number, and result of the test. The result of the test shall be reported as either "good seal" or "poor seal", "insufficient fiber tear", as applicable. The contractor shall take corrective action if the seal peel test indicates a poor seal and shall retest until a good seal is achieved.

## **PART 3 MARKING REQUIREMENTS**

### **Section 3.1 MARKINGS**

- A. The bags shall be marked in the color specified in the markings exhibits. Any markings not shown on the exhibits shall be printed in blue. When printed on the bag, the colors blue and red shall match the Pantone Matching System (PMS) chart numbers 280 and 200, respectively, to the extent practicable.
- B. All dimensions are approximate. Unless otherwise specified, all characters shall be in normal block print.
- C. The letters USA shall be Univers black (75) oblique, or Helvetica extra bold with 70% scaling and -70 tracking or equivalent to match the style as shown in the exhibits. The letters USA shall be 4 3/4 inches high and 9 3/4 inches in total width. The three stripes adjacent USA shall be 1 inch high and shall extend to the edge of the panel.
- D. The USAID logo shall be printed in the same style as shown in the exhibits. The logo shall be sized approximately 4 5/8 inches in diameter. The USDA logo shall be 4 1/2 inches high and 6 1/2 inches in total width. See exhibits.
- E. The commodity name shall be 1 1/4 inch print. Immediately below the commodity name on the front and back panels, insert additional commodity description in 5/8 inch print, if applicable.
- F. The contract number and the statement "NOT TO BE SOLD OR EXCHANGED" shall be 3/4 inch print. The net weight, bag dimensions, and the Standard Marking Requirements (SMR) or Language Marking Requirements (LMR) number shall be centered at the bottom of the bag in 1/2 inch print. See exhibits. The contractor shall obtain a waiver, in writing, from the Government to print the contract number using on-line printing on filled bags.
- G. The US Flag shall be 5 inches high and 9 inches in total width, on the back of the applicable bag. See exhibits.

- H. The letters or symbols used in the language markings for LMR-1, LMR-3 and LMR-4, LMR-5, LMR-7, and LMR-8 should be sized approximately 1 5/8 inches. The language markings for LMR-2 and LMR-6 should be sized to fit. See exhibits.
- I. Lot numbers, production codes or any other means of identification required to meet the traceability requirement shall be printed as small as possible, yet legible.
- J. Gussets. The letters USA shall be 3 inches high and printed in both gussets.
- K. Bag Closure Guide Location Bars (BCGL) shall be printed on the front panel of all multi-wall paper bags, as shown in the exhibits. The BCGL bars shall be plainly visible, approximately one inch in length, printed in blue in two parallel rows evenly spaced over the entire width of the bag. The BCGL bars are to be used as visual quality control verification. Visually identifying two bars or no bars on the bag would indicate a bag closure failure. Visually identifying one bar would indicate a proper bag closure. (Exhibits A & B)

**Section 3.2 MARKING DESCRIPTIONS**

The Government shall furnish required markings within two business days after the date of the contract. The procurement of containers should be deferred for at least two business days after the date of the contract.

The following standard marking requirements may be requested under the contract:

Standard Marking Requirement #1 (SMR-1)

**USAID – Distribution**

Front: USA with stripes, the commodity name, the words "NOT TO BE SOLD OR EXCHANGED," USAID logo, contract number, net weight, dimensions, "SMR-1". See exhibit SMR-1, front.

Back: US Flag in place of the USA with stripes, otherwise same as front. See exhibit SMR-1, back.

Standard Marking Requirement #2 (SMR-2)

**FAS - Distribution**

Front: USA with stripes, the commodity name, the words "NOT TO BE SOLD OR EXCHANGED," USDA logo, contract number, net weight, dimensions, "SMR-2". See exhibit SMR-2, front.

Back: Identical. See exhibit SMR-2, back.

Standard Marking Requirement #3 (SMR-3)

**USAID – Monetization**

Front: USA with stripes, the commodity name, USAID logo, contract number, net weight, dimensions, "SMR-3". See exhibit SMR-3, front.

Back: US Flag in place of the USA with stripes, otherwise, same as front. See

exhibit SMR-3, back.

Standard Marking Requirement #4 (SMR-4)

**FAS or USAID - Monetization**

Front: USA with stripes, the commodity name, contract number, net weight, dimensions, “SMR-4”. See exhibit SMR-4, front.

Back: Identical. See exhibit SMR-4, back.

Language Marking Requirement #1 (LMR-1)

**USAID – Distribution for North Korea**

Front: USA with stripes, the commodity name, the words "NOT TO BE SOLD OR EXCHANGED," USAID logo, contract number, net weight, dimensions, and “LMR-1.” See exhibit LMR-1, front.

Back: US Flag, the commodity name, North Korean language panel, and “LMR-1” only. See exhibit LMR-1, back.

Language Marking Requirement #2 (LMR-2)

**USAID – Distribution for Afghanistan, with Pashtu and Dari**

Front: USA with stripes, the commodity name, the words "NOT TO BE SOLD OR EXCHANGED," USAID logo, contract number, net weight, dimensions, and “LMR-2.” See exhibit LMR-2, front.

Back: US Flag, the commodity name, Pashtu and Dari language panel, and “LMR-2” only. See exhibit LMR-2, back.

Language Marking Requirement #3 (LMR-3)

**USAID – Distribution for South Africa Region**

Front: USA with stripes, the commodity name, the words "NOT TO BE SOLD OR EXCHANGED," USAID logo, contract number, net weight, dimensions, and “LMR-3.” See exhibit LMR-3, front.

Back: US Flag, the commodity name, English language panel, and “LMR-3” only. See exhibit LMR-3, back.

Language Marking Requirement #4 (LMR-4)

**USAID – Distribution for Iraq with Arabic**

Front: USA with stripes, the commodity name, the words "NOT TO BE SOLD OR EXCHANGED," USAID logo, contract number, net weight, dimensions, and “LMR-4.” See exhibit LMR-4, front.

Back: US Flag, the commodity name, Arabic language panel, and “LMR-4” only. See exhibit LMR-4, back.

Language Marking Requirement #5 (LMR-5)

**FAS – Distribution for North Korea**

Front: USA with stripes, the commodity name, the words "NOT TO BE SOLD OR EXCHANGED," USDA logo, contract number, net weight, dimensions, and “LMR-5.” See exhibit LMR-5, front.

Back: USA with stripes, the commodity name, North Korean language panel, and

“LMR-5” only. See exhibit LMR-5, back.

Language Marking Requirement #6 (LMR-6)

**FAS – Distribution for Afghanistan, with Pashtu and Dari**

Front: USA with stripes, the commodity name, the words "NOT TO BE SOLD OR EXCHANGED," USDA logo, contract number, net weight, dimensions, and “LMR-6.” See exhibit LMR-6, front.

Back: USA with stripes, the commodity name, Pashtu and Dari language panel, and “LMR-6” only. See exhibit LMR-6, back.

Language Marking Requirement #7 (LMR-7)

**FAS – Distribution for South Africa Region**

Front: USA with stripes, the commodity name, the words "NOT TO BE SOLD OR EXCHANGED," USDA logo, contract number, net weight, dimensions, and “LMR-7.” See exhibit LMR-7, front.

Back: USA with stripes, the commodity name, English language panel, and “LMR-7” only. See exhibit LMR-7, back.

Language Marking Requirement #8 (LMR-8)

**FAS – Distribution for Iraq with Arabic**

Front: USA with stripes, the commodity name, the words "NOT TO BE SOLD OR EXCHANGED," USDA logo, contract number, net weight, dimensions, and “LMR-8.” See exhibit LMR-8, front

Back: USA with stripes, the commodity name, Arabic language panel, and “LMR-8” only. See exhibit LMR-8, back.

**Section 3.3 EMPTY BAG DIMENSIONS**

- A. All bags shall be marked with the empty dimensions as follows:

Gusseted Bags	Face Width X Gusseted Width X Finished Length
Flat Tube Bags	Face Width X Finished Length

- B. The bag dimensions shall be centered at the bottom of the bag, as small as possible, yet legible.

**Section 3.4 CONTAINERS WITH INCORRECT MARKINGS**

- A. Any labels, bags, cans, can lids, cases, or any other type of packaging (hereinafter referred to as "containers") displaying incorrect markings may be used under a Government contract provided that the incorrect markings are obliterated and correct markings are applied in a permanent manner with approval of the contracting officer.
- B. The appearance of containers in commercial or other channels either filled or unfilled bearing markings identifying the containers as part of a Government contract may cause the Government expense in determining whether commodities

have been diverted from authorized use and in answering inquiries. The contractor shall take all necessary action to prevent the appearance in commercial or other channels of containers and container materials bearing any markings required under a Government contract, including those held by the contractor or others; e.g., overruns, misprints, etc. The contractor shall ensure that any container from a Government contract that appears in commercial or other channels shall have all markings required under this contract permanently obliterated.

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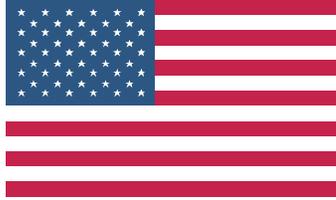
**CORN SOY MILK**

NOT TO BE SOLD OR EXCHANGED



CONTRACT ABCD01234  
 NET WEIGHT: 25 kg, 55.115 lb.  
 16 x 4 x 37  
 SMR-1

**USA**



**CORN SOY MILK**

NOT TO BE SOLD OR EXCHANGED



CONTRACT ABCD01234  
 NET WEIGHT: 25 kg, 55.115 lb.  
 16 x 4 x 37  
 SMR-1

**USA**

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**USA**

**CORN SOY MILK**

NOT TO BE SOLD OR EXCHANGED

**USDA**

CONTRACT ABCD01234

NET WEIGHT: 25 kg, 55.115 lb.

16 x 4 x 37

SMR-2

**USA**

**USA**

**CORN SOY MILK**

NOT TO BE SOLD OR EXCHANGED

**USDA**

CONTRACT ABCD01234

NET WEIGHT: 25 kg, 55.115 lb.

16 x 4 x 37

SMR-2

**USA**

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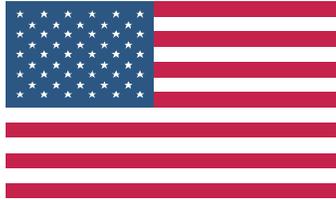


**CORN SOY MILK**



**CONTRACT ABCD01234**  
 NET WEIGHT: 25 kg, 55.115 lb.  
 16 x 4 x 37  
 SMR-3

**USA**

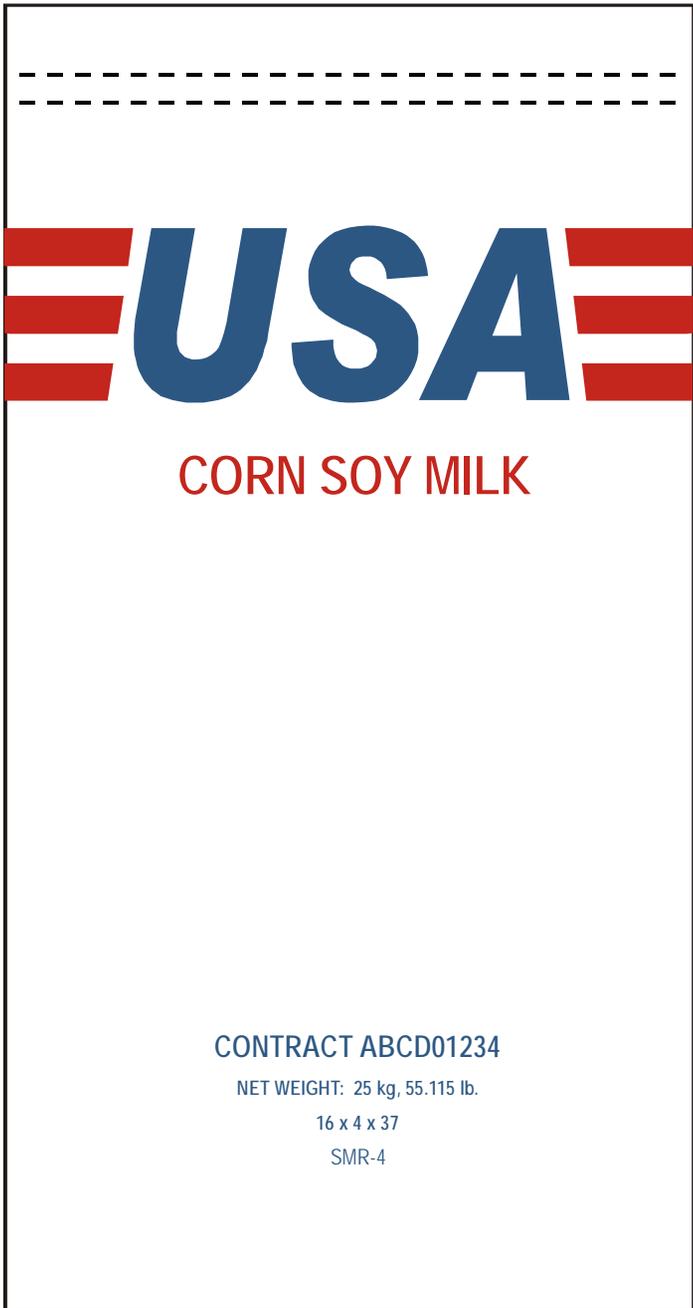


**CORN SOY MILK**



**CONTRACT ABCD01234**  
 NET WEIGHT: 25 kg, 55.115 lb.  
 16 x 4 x 37  
 SMR-3

**USA**



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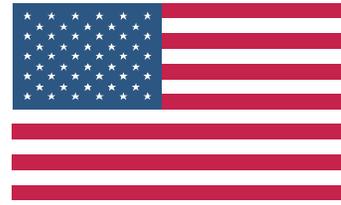
**CORN SOY MILK**

NOT TO BE SOLD OR EXCHANGED



CONTRACT ABCD01234  
 NET WEIGHT: 25 kg, 55.115 lb.  
 16 x 4 x 37  
 LMR-1

**USA**



**CORN SOY MILK**

NOT TO BE SOLD OR EXCHANGED

미국에서  
 보내온 선물

LMR-1

**USA**

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**CORN SOY MILK**

NOT TO BE SOLD OR EXCHANGED



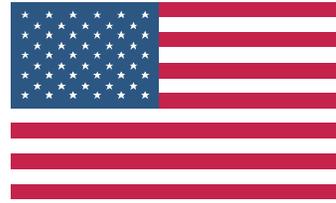
CONTRACT ABCD01234

NET WEIGHT: 25 kg, 55.115 lb.

16 x 4 x 37

LMR-2

**USA**



**CORN SOY MILK**

د امریکا د متحده ایالاتو  
د خلکو سوغات

تحفهء مردم  
ایالات متحده امریکا

LMR-2

**USA**

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**USA**

**CORN SOY MILK**

NOT TO BE SOLD OR EXCHANGED



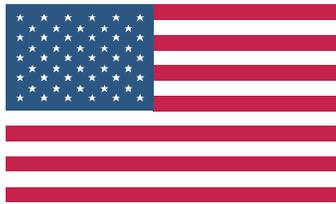
CONTRACT ABCD01234

NET WEIGHT: 25 kg, 55.115 lb.

16 x 4 x 37

LMR-3

**USA**



**CORN SOY MILK**

Gift of the People of the  
United States of America

LMR-3

**USA**

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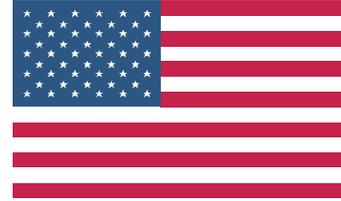
**CORN SOY MILK**

NOT TO BE SOLD OR EXCHANGED



CONTRACT ABCD01234  
 NET WEIGHT: 25 kg, 55.115 lb.  
 16 x 4 x 37  
 LMR-4

**USA**



**CORN SOY MILK**

هدية من  
الشعب الأمريكي

LMR-4

**USA**

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**CORN SOY MILK**

NOT TO BE SOLD OR EXCHANGED



CONTRACT ABCD01234  
 NET WEIGHT: 25 kg, 55.115 lb.  
 16 x 4 x 37  
 LMR-5

**USA**



**CORN SOY MILK**

미국에서  
 보내온 선물

LMR-5

**USA**

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**CORN SOY MILK**

NOT TO BE SOLD OR EXCHANGED



CONTRACT ABCD01234  
 NET WEIGHT: 25 kg, 55.115 lb.  
 16 x 4 x 37  
 LMR-6

**USA**



**CORN SOY MILK**

د امریکا د متحده ایالاتو  
 د خلکو سوغات

تحفهء مردم  
 ایالات متحده امریکا

LMR-6

**USA**

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**CORN SOY MILK**

NOT TO BE SOLD OR EXCHANGED



CONTRACT ABCD01234  
 NET WEIGHT: 25 kg, 55.115 lb.  
 16 x 4 x 37  
 LMR-7

**USA**



**CORN SOY MILK**

Gift of the People of the  
 United States of America

LMR-7

**USA**

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**CORN SOY MILK**

NOT TO BE SOLD OR EXCHANGED



CONTRACT ABCD01234  
 NET WEIGHT: 25 kg, 55.115 lb.  
 16 x 4 x 37  
 LMR-8

**USA**



**CORN SOY MILK**

هدية من  
 الشعب الأمريكي

LMR-8

**USA**

**High Performance Bags:**  
1 inch blue stripe

